When is an NTU not an NTU? — USGS and ASTM address turbidity data comparability and storage issues with new reporting units

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Biographical Sketches of Authors

Chauncey Anderson: is a hydrologist with the Oregon District of the USGS, with a major focus on water quality. Currently he is revising the USGS' National Protocol for the measurement of turbidity. Chauncey also is working on issues of sediment and contaminant transport associated with reservoir drawdown and the use of turbidity as a surrogate for suspended sediment concentration for determination of sediment loads. He has expertise in stream nutrient dynamics, eutrophication, and pesticide occurrence in streams of Oregon. He began working for the USGS since 1991, after completing his Master's Degree from the University of Washington in Seattle.

Mr. Glysson has over 34 years of service with the USGS as a hydrologic engineer, hydrologist, and supervisory hydrologist, working at all levels of the Water Resources Discipline and has served in supervisory and technical management positions. Mr. Glysson has a M.S. in Engineering Administration and a B.S. in Civil Engineering. He currently serves as the Vice Chair of ASTM International's Committee on Water and Secretary of the Board of Registration for American Institute of Hydrology. He has authored over 35 books, reports, papers, and standards on sediment data collection, analysis, and transport. He has taught the USGS' Sediment Field Data Collection Techniques and Sediment Records Computation and Interpretation Courses, a WMO International Workshop on Sediment Transport Measurements in Beijing, China, and numerous short courses. He has preformed research into the differences between TSS and SSC analyses and co-authored USGS policy memorandum on the subject.

Abstract

The availability of relatively inexpensive, yet sophisticated instrumentation that allows nearly continuous monitoring and logging of turbidity data, combined with increasing recognition of the multitude of environmental issues associated with turbidity in water, has resulted in growing demand for high quality and objective turbidity data. Technological advances have resulted in a variety of available turbidimeters that can meet many different objectives. However, different meters often do not yield equivalent results because of differences in instrument design. The US Geological Survey (USGS), in conjunction with ASTM, has recently produced a major revision in its protocols for the measurement and storage of turbidity data. Among the changes, USGS and ASTM have developed a suite of new reporting units that are applied to turbidity data on the basis of the instrument design. Data will be stored according to these reporting units, reducing the likelihood that turbidity data from significantly different technologies will be inappropriately compared against each other; however, some data comparability problems remain. Consistency of procedures and instruments within and among programs in which data will be compared (over space or time) is a crucial consideration for the success of future turbidity monitoring programs.